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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,093	09/17/2003	Seok-Jun Won	5649-906DV	6185
20792	7590	03/15/2005	EXAMINER	
MYERS BIGEL SIBLEY & SAJOVEC			WEISS, HOWARD	
PO BOX 37428			ART UNIT	
RALEIGH, NC 27627			PAPER NUMBER	
			2814	

DATE MAILED: 03/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

ALC

Office Action Summary	Application No.		Applicant(s)	
	10/665,093		WON ET AL.	
	Examiner		Art Unit	
	Howard Weiss		2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-15 ~~is~~ are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-15 ~~is~~ are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Attorney's Docket Number: 5649-906DV

Filing Date: 9/17/03

Continuing Data: Division of 10/028,187 (12/20/2001 now U.S. Patent No. 6,653,186)

Claimed Foreign Priority Date: 12/26/00 (KRX)

Applicant(s): Won et al. (Yoo)

Examiner: Howard Weiss

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1, 2, 5 and 7, 8, 10, 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. (U.S. Patent No. 6,274,426) and Yamada (U.S. Patent No. 5,023,683).

Lee et al. show most aspects of the instant invention (e.g. Figure 9B) including:

- an electrically insulating, silicon oxide support layer **10b** having an opening and on an integrated circuit substrate **1**

- a U-shaped lower electrode **16** with an inner surface and a outer portion
- a first capacitor dielectric layer **17** extending on the inner surface, on the outer portion and on the support layer
- a second capacitor dielectric layer **14c** extending between the outer portion and an inner sidewall of the opening and said second capacitor dielectric layer not extending on said inner surface and made of an oxide etch-resistant material (i.e. silicon nitride)
- an upper electrode **18** on the first capacitor dielectric layer

Lee et al. do not show the second capacitor dielectric between the outer portion of the lower electrode and said first capacitor dielectric and directly contacting a surface of the first capacitor dielectric layer opposite the lower electrode. Yamada teaches (e.g. Figures 1) to extend a second dielectric **9a** so as to be above the upper surface of a support layer **7a** to maintain the prescribed capacitance of the storage capacitor (Column 9 Lines 1 to 12). If the second capacitor dielectric of Lee et al. is extended as taught by Yamada then it would be between the outer portion of the lower electrode and said first capacitor dielectric and directly contacting a surface of the first capacitor dielectric layer opposite the lower electrode. It would have been obvious to a person of ordinary skill in the art at the time of invention to extend the second dielectric so as to be above the upper surface of a support layer and, therefore, be between the outer portion of the lower electrode and said first capacitor dielectric and directly contacting a surface of the first capacitor dielectric layer opposite the lower electrode as taught by Yamada in the device of Lee et al. to maintain the prescribed capacitance of the storage capacitor.

3. Claims 3, 4, 6, 11 to 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. and Yamada, as applied to Claims 1 and 8 above, and in further view of Nakamura (U.S. Patent No. 6,573,553).

Yamada shows most aspects of the instant invention (Paragraph 2) except for the support layer comprising an etch stop layer of silicon nitride and an mold layer of silicon oxide and said first dielectric layer comprising tantalum oxide and extending into the support layer. Nakamura teaches (e.g. Figure 31B and Column 27 Line 1 to Column 28 Line 67) to make a support layer with an etch stop layer **47** comprising silicon nitride, a mold layer **24** consisting of silicon oxide, and to extend the first capacitor dielectric **55**, comprising tantalum oxide, into the support layer to realize an higher integration and higher density semiconductor integrated circuit device (Column 30 Lines 8 to 11). It would have been obvious to a person of ordinary skill in the art at the time of invention to make a support layer with an etch stop layer comprising silicon nitride, a mold layer consisting of silicon oxide, and to extend the first capacitor dielectric, comprising tantalum oxide, into the support layer as taught by Nakamura in the device of Lee et al. and Yamada to realize an higher integration and higher density semiconductor integrated circuit device.

Response to Arguments

4. Applicant's arguments with respect to Claims 1 to 8 and 10 to 15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and

any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office actions as of June 2004. Paper copies of foreign patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site (www.uspto.gov), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this policy. Requests to restart a period for response due to a missing U.S. patent or patent application publications will not be granted.
7. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(703) 872-9306**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(571) 272-1720** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via Howard.Weiss@uspto.gov.
9. The following list is the Examiner's field of search for the present Office Action:

Art Unit: 2814

Field of Search	Date
U.S. Class / Subclass(es): 257/ 304, 309	thru 3/10/05
Other Documentation: none	
Electronic Database(s): EAST, IEL	thru 3/10/05

HW/hw
10 March 2005



Howard Weiss
Primary Examiner
Art Unit 2814